

# Sustainable Agriculture

Looking forward for this generation  
and the next...

at **UGA**



## Winter 2017

This is supposed to be the winter newsletter, but with daytime temperatures bouncing back in forth from the 40s to the 70s it's hard to know which season we are in. In any case spring will be just around the corner, so you may be thinking about what this years' growing season will bring.

Although drought conditions have been alleviated by winter rains, there are still drought conditions in north Georgia. Basically this means that in many places we haven't yet gotten the recharge to subsoil moisture that we need. This may mean that irrigation will be important for farmers this year. This makes the work reported on the Vegetable Irrigation App in this issue of the newsletter particularly timely.

You can find a lot of information related to climate and agriculture at the College's blog by Pam Knox – On the CASE – Climate and Agriculture in the South East. One of her recent posts indicates that we are likely to experience late frosts in years when we are in neutral conditions (no La Nina and no El Nino). And though I don't have any peer reviewed data on this, Easter is late this year, and the old timers always warn about late frosts with a late Easter. So you may not want to be too tempted by our warm spells.

On another note, if you are interested in seeds, check out the article on the seed library that is growing in Cherokee County. It is a great way that Extension has

### Contents

Winter Southeast Update from Julia Gaskin	1
Biosecurity for the Home Front	2
Irrigation Management: Scheduling Irrigation with Smartirrigation Apps	3
Journeyman Farmer Program - Year 2 & 3	5
Seed Library in Cherokee County	6

### Upcoming Events

- February 27, 2017 - Pruning Class  
Acworth, GA*
- February 28, 2017 - Raised Bed Gardening  
Fayetteville, GA*
- March 7, 2017 - Vegetable Garden Pests - ID  
Fayetteville, GA*
- March 8, 2017 - Soil Health Class  
Athens, GA*
- March 21, 2017 - Sheep and Goat Production  
Manchester, GA*

Find more information on these events at  
[www.SustainAgGa.org](http://www.SustainAgGa.org)

Also find basic principles of sustainable agriculture, Extension bulletins, research publications as well as archived copies of this newsletter.

connected people with other people as well as back to the land.

There are a lot of interesting things happening here around sustainable agriculture. First and foremost, we are here to help you. Let us hear from you.

As always, good growing.

*Julia Gaskin*  
*Sustainable Agriculture Coordinator*  
*University of Georgia*

## Extension

### *Biosecurity for the Home Front*

Often heard of, frequently misunderstood, “biosecurity” is a set of practices that all poultry owners should know and implement to protect their poultry flocks from disease. Birds that are raised under pastured or free-range management styles are particularly in need of attention due to their increased exposure to environmental disease sources.

#### What is biosecurity?

Biosecurity is the practice of minimizing the spread of disease into a flock of birds, or in the event of disease occurrence, preventing the spread of disease-causing organisms off the premises. This is accomplished through practical, common-sense prevention measures.

#### Common Routes of Infection

- Exposure to diseased birds, either wild or from purchased stocks of questionable origin.
- Introduction of healthy birds who have recovered from disease but are now pathogen carriers.
- Shoes and clothing of visitors or caretakers who have been in contact with other birds.
- Use of borrowed equipment that is contaminated with disease organisms.
- Rodents, insects, and free-flying birds gaining access to feed sources.

Of all the possible breakdowns in biosecurity, the introduction of new birds into an existing flock and contaminated foot traffic pose the greatest risk to

bird health. Properly managing these two factors should be a top priority.

#### Disease Prevention Practices

Because of the destructive potential that a contagious poultry disease could have on our commercial industry and small flocks alike, poultry owners are encouraged to adopt the following:

- Prevent wild birds, particularly waterfowl, from mingling with the flock. This may require penning of poultry during this time of heightened concern of Avian Influenza.
- Avoid coming in contact with other birds and flocks, particularly birds with questionable origin from auctions and live bird markets.
- Purchase new stock from reputable dealers, preferably those that participate with the National Poultry Improvement Plan. New birds represent a greater risk to biosecurity because their disease status is often unknown. They may have an infection or become susceptible to an infection that is already present in birds that appear healthy in the existing flock.



*Properly managing foot traffic and introduction of new birds are a top priority.*

- Quarantine all new birds away from the existing flock for at least 3 weeks. This will help identify birds recently exposed to disease, though it will not identify those that have previously been sick and have recovered and continue to shed pathogens. Sick birds that survive such viral disease become carriers of the virus and can infect unexposed birds.



- Wear dedicated footwear that can be sanitized after every visit when attending to your birds. Disinfectant footbaths may help to decrease the dose of organisms on footwear that can be tracked into poultry enclosures.

- Do not share equipment, tools, or poultry supplies with your neighbors or other bird owners. If you do bring these items home, clean and disinfect them before they reach your poultry.

### Know the Warning Signs

Early detection is important to prevent the spread of disease. Look for changes in eating, drinking, behavioral habits, and for signs and sounds of respiratory distress.

- Sudden increase in bird deaths
- Sneezing, coughing, and nasal discharge
- Lack of energy and poor appetite
- A drop in egg production or an increase in soft or thin shelled eggs
- Swelling around the eyes, neck, and head
- Purple discoloration of the wattles, combs and legs
- Tremors, drooping wings, twisting of the head and neck.

If your birds are sick or dying, call your local county extension office, or the Georgia Poultry Laboratory Network located in Gainesville, Georgia. Each office can assist you by use of a disease diagnostic questionnaire to help identify the severity and level of concern over the symptoms your birds are experiencing.

During this time of heightened concern over the threat of Avian Influenza, due vigilance is warranted for backyard poultry keepers and commercial growers alike.

### Resources:

UGA Poultry Science Avian Flu Information page  
<http://extension.uga.edu/topics/poultry/avian-flu/>

Avian Influenza: Frequently Asked Questions  
<http://extension.uga.edu/topics/poultry/avian-flu/documents/AI-FAQ.pdf>

United States Department of Agriculture, Animal and Plant Health Inspection Service  
[https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/sa\\_animal\\_disease\\_information/sa\\_avian\\_health/sa\\_biosecurity\\_for\\_birds/](https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/sa_animal_disease_information/sa_avian_health/sa_biosecurity_for_birds/)



## PROTECTING GEORGIA'S POULTRY FARMS

Prepared by:  
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Animal Waste Awareness and  
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## Growers Corner

### *Irrigation Management: Scheduling Irrigation with Smartirrigation Apps*

Ever wondered when you need to irrigate your vegetables? Irrigation scheduling has long confused people. We know that providing enough water for good plant growth is essential, but too much can hurt our crops and increase our input costs. There are irrigation scheduling models that primarily let the user know how much water they might use over a season; but, few possess the ability to predict water use based on real-time weather conditions for a specific location. Other tools have been developed to improve irrigation scheduling, but growers have been reluctant to adopt these irrigation scheduling methods because they may be too cumbersome to use, require specialized equipment, or are perceived as too risky compared to traditional methods.

Recent research has led to the development of the Smartirrigation™ application ([smartirrigationapps.org](http://smartirrigationapps.org)), a group of smartphone apps that allow for growers to make informed decisions about irrigation proactively. These apps have shown the potential to aid farmers in conserving water, while maintaining or even enhancing yields in citrus, cotton and strawberry growing operations. Currently, a new Smartirrigation Application, the Vegetable App, is being evaluated to optimize water usage and yields for squash, tomato, watermelon and cabbage production.

The Vegetable App calculates irrigation schedules based on evapotranspiration (ET) measurements from the Georgia Automated Environmental Monitoring Network (GAEMN) and crop coefficient

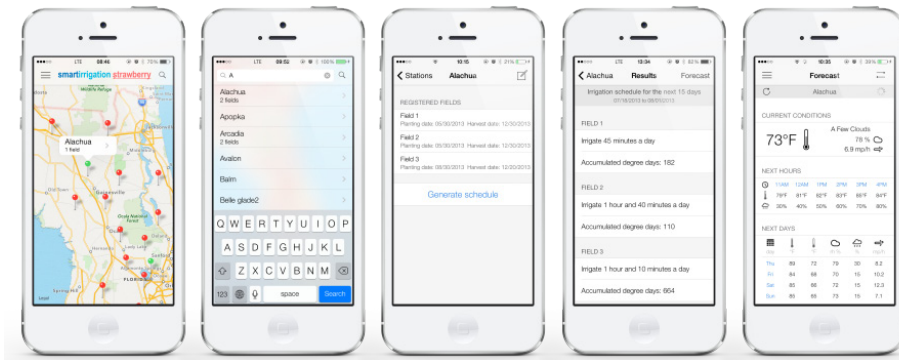


Figure 1: Smartirrigation Apps allow users to select the nearest weather station (left), create multiple irrigation schedules to accommodate specific field conditions (center) and generate irrigation schedules based on field data supplied by the user as well as maintain updated weather forecast information (right).

curves developed by researchers at the University of Florida. The ET from the weather station is a measure of how much water is lost from the soil under particular weather conditions. This is modified by the crop coefficient curves, which give the amount of water a plant needs at different stages of growth. The app also determines water usage based on additional parameters specific to the user's location. These parameters include: crop type, between row spacing, planting date, efficiency of irrigation system, irrigation rate, desired duration of irrigation event and location of the nearest GAEMN station. The app's functionality allows for accessibility in field settings, as apps are conveniently transportable and readily accessible through smartphone devices, which also notify growers of important weather and irrigation schedule events autonomously.

The usefulness of the app was evaluated by comparing it with three methods of irrigation scheduling based on either historical evapotranspiration measurements (UGA checkbook method), crop coefficients and real-time evapotranspiration measurements (Vegetable App), or soil moisture measurements provided by soil moisture sensors (tensiometers). Soil moisture levels were monitored

throughout the season by soil moisture sensors at depths of 6", 10", and 14". Crop coefficients were based on the number of days after planting. Yields, the monthly water use as well as the total water use were compared to analyze the efficacy and efficiency of the app. We also measured important vegetable fruit quality characteristics in tomato and watermelon.

Our results showed that irrigation scheduling with the Vegetable App could reduce water use and improve yields compared to the checkbook method. Soil moisture sensors also reduced water use; however, yields were also reduced for tomato and watermelon compared to yields obtained from the Vegetable App or the checkbook method. Internal fruit quality was not affected by irrigation scheduling regimes, but marketable fruit yields decreased when grown under the checkbook method. Based on our first season of data the Vegetable App improved profitability of tomato and watermelon production and reduced water use compared to the UGA checkbook method. The Vegetable App will continue to be evaluated and presents an option for alternative irrigation scheduling. If you are interested in giving it a try, check out the app at [smartirrigationapps.org](http://smartirrigationapps.org).



Figure 2: The Cotton App, Strawberry App, Turf App, and Citrus App reduced water use and maintained or improved yields, ([smartirrigationapps.org](http://smartirrigationapps.org)).

Luke Miller  
MS in Horticulture Candidate  
The University of Georgia

## Extension

### *Journeyman Farmer Program—Year 2 & 3*

The Journeyman Farmer Certificate Program helps educate beginning farmers in Georgia. This program, run by UGA extension agents, has helped folks learn more about small farm business planning, fruit and vegetable production, and/or small ruminant production. For more details about exactly what the program involves, see our previous article in Fall 2016 newsletter or the SustainAg website (<http://sustainagga.org/>).

Four participants from the first year of the program completed all three stages, Lonnie Edenfield, Martine Olsen, Azalea Moss, and Julie Best. They were able to intern/mentor with farmers in order to gain practical experience to help them in their future farming endeavors. The first year graduates were recognized at the Georgia Organics conference this year.

Azalea Moss interned with Truly Living Well in Atlanta, “I have learned several farming techniques as an intern at Truly Living Well, such as soil conditioning, composting, transplanting, planting and storing seeds, crop rotation, pest and weed control, marketing, agri-tourism, building a greenhouse, worm beds and more.



*Azalea Moss shows off lettuce heads she grew while interning at Truly Living Well Farm.*

Everything that I learned at Truly Living Well, I am applying to my farm in Austell so that I can be successful in vegetable, fruit and flower production.”

The Journeyman program is expanding and growing from its pilot year. Year two locations include Carroll, DeKalb, Dougherty, and Screven counties. These counties are finishing trainings and the Hands-On program for these sites will begin this spring. While the pilot year involved 92 unique participants, Year 2 has attracted at least 230 people to its trainings.



*Journeyman Farmer pottery was awarded to the first cohort of Journeyman Farmers at GA Organics Conference.*

Overall, the response to the program has been positive. Evaluations taken after the program have shown that participants feel more knowledgeable in business planning and production steps after the course.

For example, Darryll Simpkins, of Screven County learned a great deal about business planning and small ruminants, “As a career military logistics officer, I entered this program with some knowledge and experience with of business management, but very little knowledge or experience with livestock management. During the past few months, I have developed a business plan that I will use to secure the capital required to start a farm. The plan will also serve as a roadmap to keep the business moving toward our goals. The Small Ruminant Production Training was awesome! After completing the six sessions, I believe I have a basic conceptual understanding of small ruminant management.”

The third year of the program will take place in Gwinnett, Greene, and Houston counties. If you are interested in learning more about farming, see below for dates and more information about how to sign up.

*Lindsay Davies  
Journeyman Farmer Program Assistant  
The University of Georgia*



## Extension

### *Seed Library in Cherokee County*

On March 8, 2016, the Hickory Flat Library opened Cherokee County's first seed library. The county's extension office and its Master Gardener Extension Volunteers collaborated with the Sequoyah Regional Library system to provide the seed library, which is a retro-fitted antique dresser filled with a variety of flower, herb, and vegetable seeds.

Gerald Phillips, one of Cherokee County's Master Gardener Extension Volunteers, serves as coordinator of the seed library. This was a natural role for him to fill, as he is an advanced vegetable gardener and enjoys sharing his knowledge of vegetable gardening with others. In the months prior to the seed library's launching, Gerald estimates that he devoted approximately 150 hours to the entire project, which included carpentry work on the cabinet, making labels, and packing seeds. "I just believe that gardening is the most relaxing, stress relieving activity that people can do and I hope that this helps others spend more time in the garden," said Phillips. "My hope is the eventually we will be able to definitively say that the seeds in our library are the best seeds for our area."



*Gerald Phillips, Master Gardener, works to make dividers for the cabinet that holds the seed library.*

Seed saving is a time-honored tradition that allows for selection and perpetuation of plants that have particular value to a gardener, whether it is an especially early and tasty tomato or a vigorous and drought adapted hollyhock. Mr. James Satterfield, a life-long Cherokee County resident and Hickory Flat

Library patron, recently provided an example of such a particular variety. Mr. Satterfield is 83 years old, but you would never guess his age by the beauty and fullness of his garden. Mr. Satterfield learned about the seed library through a normal visit to the library and was immediately drawn to the concept of sharing seeds with others. Mr. Satterfield has shared a number of varieties with the library.



*Mr. Satterfield points to his seedling for this year's garden.*

The seed library is free to the public. Interested gardeners are simply asked to fill out a membership form when they check out seeds. Since its official launching, the seed library has seen over 80 people fill out membership forms and borrow seeds, some of which had ventured over 40 miles to make the visit. "The seed library has been a wonderful addition to our branch and we know it has brought in new patronage to the library," said Rhonda Broome, Hickory Flat Library Branch Manager.

The initial inventory of seeds was collected from a number of Master Gardener Extension Volunteers and the Cherokee ANR agent, Josh Fuder.

Additional seeds were donated by the Seed Savers Exchange and Botanical Interests seed company. The seeds are organized by level of difficulty, so that people can select seeds that match their level of seed saving skills. Borrowers are asked to return some of the seeds from their successful plants at the end of the season. As growers deposit seeds, the seed library maintains its inventory and contains plants that are better adapted to growing in our unique growing environment.

The project is a natural fit with Extension programming. Extension developed two tri-fold brochures on basic seed saving and how to use the seed library. The location at the Hickory Flat library was chosen as the initial site due to its central location in the county and also because it hosts the majority of Extension's public seminars. The seed library has created a great deal of interest from other library branches in Cherokee County and there are plans to start a second seed library at another location later this year.



*Josh Fuder and volunteers at the Cherokee County Seed Library.*

*Josh Fuder  
Cherokee County Extension Agent  
The University of Georgia*

Upcoming Events!

## **Journeyman Farmer Certificate Program**

This project is funded by USDA NIFA Beginning Farmer Rancher Development Program and includes three training steps:

1. Small Farm Business Planning,
2. Small Fruit & Vegetable Production or Small Ruminants Production,
3. Hands-on Production Training.

### **Houston County:**

#### **AgAware Small Farm Business Planning**

Feb. 24, 9-4 p.m.

Cost: FREE

TO REGISTER: Houston County Extension Office

Charlotte Meeks

E-Mail: [cmote1@uga.edu](mailto:cmote1@uga.edu)

#### **Small Fruit and Vegetable Training**

May 2, 4, 9, 11, 9-3 p.m.

Cost: \$70

### **Greene County:**

#### **AgAware Small Farm Business Planning**

March 17, 9 - 4 p.m.

Cost: FREE

TO REGISTER: Greene County Extension Office

David Daniel

E-mail: [dldjr@uga.edu](mailto:dldjr@uga.edu)

#### **Small Fruit and Vegetable Training**

April 25 - June 6, Tuesdays Only 6-8:30 p.m.

Cost: \$75

### **Gwinnett County:**

#### **Small Farm Business Planning**

March 31 & April 1, 8-1 p.m.

Cost: \$50

TO REGISTER: Gwinnett County Extension Office

Tim Daly

E-Mail: [tdaly@uga.edu](mailto:tdaly@uga.edu)

#### **Small Fruit and Vegetable Training**

June 15, 16, 17 8-3 p.m.

Cost: \$75

